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THE COLEOPTERA OF GLACIER PARK, MONTANA.

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The following list of beetles is the result of collecting done in Glacier National Park, Montana, during three summer vacations, 1924, 1929, and 1931.

It is readily recalled that this park covers an area of fifty miles from north to south and about thirty-five miles from east to west, running along the international boundary. Within the park are found four life zones. (1) The Transition zone extends from the plains country into some of the valleys within the park. (2) The Canadian covers the greater part of the park. This is for the most part a heavily wooded region. (3) Next comes the Hudsonian which is but a narrow strip at a higher elevation and is characterized by small stunted trees and mountain meadows filled with flowers. (4) Finally we find the Arctic-Alpine represented at some of the lakes such as Iceberg and Cracker and on higher parts of the mountains, some of which are readily accessible where foot and horse trails cut the mountain passes. The park is dotted with numerous lakes, large and small, fed by streams of ice cold water. As for altitude, the elevations at which collecting was done ranged from 3167 feet at Lake McDonald up to about 7000 feet at some of the passes. It was not, however, evident that the distribution of beetles was markedly limited in location due to elevation.

In this mountainous region, the seasons are so telescoped together that spring, summer, and autumn follow each other in quick succession, and, in fact, their flora often overlap. The earliest date of collecting was on June 28 and the latest August 16. Spring lingers so late and autumn comes so early that within this time practically the whole summer collecting season may be covered.

During the three summers, I have spent a total of thirteen weeks in the park. Collecting was done not only around the camps and lakes in the valleys but also along practically all of the accessible trails. The number of species taken and identified up to this time includes 318, distributed among 35 families. In the identification of these beetles, I am greatly indebted to Dr. Henry C. Fall for his invaluable assistance.

The most interesting species collected was *Gehringia olympica* Darlington which was taken both in 1929 and in 1931 in considerable numbers at the entrance and at Two Medicine Lake. By disturbing the stones at the water's edge of both streams and lake, this species could be obtained.

In view of the fact that in the January, 1933, issue of The Canadian Entomologist, Dr. Melville H. Hatch published a list of Montana beetles numbering 257, it seems worthwhile to submit the following list of 318, which adds 289 species to the already published Montana list. Those that I have taken in Glacier Park which appear in Dr. Hatch's article, are also included but are marked with an asterisk. The numbers in parenthesis at the right of the names indicate

the number of specimens taken. Only the earliest and latest dates of capture are recorded.

LIST OF SPECIES.

Family Cicindelidae.

59b *Cicindela longilabris montana* Lec. (2) 21 Jy.

Family Carabidae.

115 *Trachypachus inermis* Mots. (3) 5 Jy.-1 Aug.
Gehringia olympica Darlington (50) 8 Jy.-30 Jy.
145e *Brennus marginatus fulleri* Horn (2) 28 Jy.
*209 *Callisthenes moniliatus* Lec. (1) 14 Jy.
*229 *Elaphrus lecontei* Cr. (1) 14 Jy.
268 *Nebria purpurata* Lec. (3) 18 Jy.
276 *Nebria sahlbergi* Fisch. (12) 29 Je.-15 Jy.
276b *Nebria moesta* Lec. (57) 29 Je.-5 Aug.
277 *Nebria gebleri* Dej. (1) 18 Jy.
431 *Bembidion bifossulatum* Lec. (1) 5 Aug.
*438 *Bembidion nitidum* Kby. (1) 6 Aug.
460 *Bembidion funereum* Lec. (12) 29 Je.-18 Jy.
475 *Bembidion conflictum* Csy. (?) (11) 30 Je.-5 Aug.
487 *Bembidion planuisculum* Mann. (10) 8 Jy.-18 Jy.
494 *Bembidion decrepitum* Csy. (?) (27) 30 Je.-5 Aug.
498 *Bembidion complanulum* Mann. (31) 5 Jy.-31 Jy.
501 *Bembidion quadrifovealatum* Mann. (1) 14 Jy.
502 *Bembidion incertum* Mots. (19) 1 Jy.-30 Jy.
514 *Bembidion quadrulum* Lec. (20) 30 Je.-31 Jy.
529 *Bembidion longulum* Lec. (7) 8 Jy.-5 Aug.
*540 *Bembidion transversale* Dej. (8) 13 Jy.-18 Jy.
*575 *Bembidion bimaculatum* Kby. (1) 14 Jy.
581 *Bembidion consanguineum* Hayw. (1) 15 Jy.
584 *Bembidion rupicola* Kby. (*lucidum* Lec.) (12) 4 Jy.-12 Jy
599 *Bembidion fuscicrum* Mots. (19) 8 Jy.-8 Aug.
723 *Bembidion versicolor* Lec. (6) 21 Jy.-15 Aug.
Bembidion n. sp. (?) (28) 8 Jy.-30 Jy.
889 *Tachyta kirbyi* Csy. (1) 6 Aug.
890 *Tachyta nana* Gyll. (3) 6 Aug.-21 Aug.
906 *Platidius aterrimus* Dej. (34) 1 Jy.-31 Jy.
908 *Platidius rugicollis* Rand (2) 18 Jy.
910 *Trechus chalybeus* Dej. (12) 6 Jy.-26 Jy.
1004 *Pterostichus spodrinus* Lec. (1) 29 Je.
Pterostichus sp. (1) 9 Jy.
1127 *Cryobius riparius* Dej. (7) 1 Jy.-6 Aug.
*1156 *Poecilus corvus* Lec. (2) 19 Jy.-5 Aug.
*1192 *Bothriopterus adstrictus* Esch. (2) 19 Jy.-26 Jy.
1240 *Curtonotus laticollis* Lec. (1) 19 Jy.
1279 *Percosia diffinis* Lec. (1) 19 Jy.
*1281 *Percosia obesa* Say (1) 21 Jy.
1299 *Celia californica* Dej. (1) 21 Jy.

1323 *Celia gibba* Lec. (3) 23 Jy.
Celia sp. Allied to *brunnea* (1) 15 Jy.
1363 *Celia texana* Putz. (2) 19 Jy.
*1372 *Celia musculus* Say (1) 21 Jy.
Celia sp. (1) 4 Jy.
Celia sp. (1) 9 Aug.
1488 *Pristodactyla advena* Lec. (8) 6 Jy.-22 Jy.
1528 *Platynus piceolus* Lec. (2) 18 Jy.-23 Jy.
1548 *Platynus corvus* Lec. (1) 4 Jy.
1570 *Platynus cupreus* Dej. (1) 21 Jy.
*1573 *Platynus bogemanni* Gyll. (1) 5 Aug.
1655 *Lebia viridis* Say (2) 14 Jy.
1693 *Apristus cordicollis* Lec. (1) 14 Jy.
*1699 *Metabletus americanus* Dej. (1) 21 Jy.
*1731 *Cymindis laticollis* Say (4) 12 Jy.-29 Jy.
1933 *Harpalus viduus* Lec. (10) 19 Jy.-6 Aug.
*1935 *Harpalus montanus* Lec. (3) 10 Jy.-21 Jy.
1947 *Harpalus carbonatus* Lec. (1) 21 Jy.
Harpalus sp. near *carbonatus* (3) 4 Jy.-11 Jy.
1948 *Harpalus fugitans* Csy. (1) 6 Aug.
2173 *Stenocellus debilipes* Say (1) 19 Jy.
2238 *Stenolophus conjunctus* Say (2) 8 Jy.

Family Amphizoidae.

2280 *Amphizoa insolens* Lec. (5) 1 Jy.

Family Dytiscidae.

2526 *Hydroporus vilis* Lec. (1) 21 Jy.
19224 *Hydroporus planiusculus* Fall (2) 10 Jy.-23 Jy.
2520 *Hydroporus humeralis* Aube. (32) 17 Jy.-22 Jy.
2487 *Hydroporus occidentalis* Shp. (probably) (2) 22 Jy.-23 Jy.
Hydroporus striola Gyll. (Apparently) (2) 12 Jy.-22 Jy.
*2431 *Hydroporus* (*Deronectes*) *stiatellus* Lec. (2) 17 Jy.-26 Jy.
*2430 *Hydroporus* (*Deronectes*) *griseostriatus* DeG. (2) 22 Jy.
19196 *Hydroporus semiclarus* Fall (2) 17 Jy.
2483 *Hydroporus septentrionalis* Gyll. (14) 12 Jy.-11 Aug.
Hydroporus n. sp. (?) (34) 4 Jy.-23 Jy.
*2539 *Agabus seriatus* Say (1) 21 Jy.
2547 *Agabus confertus* Lec. (2) 22 Jy.
*2574 *Agabus strigulosus* Cr. (2) 21 Jy.-22 Jy.
*2578 *Agabus austini* Shp. (8) 11 Jy.-26 Jy.
*2582 *Agabus tristis* Aube. (1) 22 Jy.
19237 *Agabus approximatus* Fall (1) 21 Jy.

Family Hydrophilidae.

*2808 *Hydrobius fuscipes* L. (1) 21 Jy.
2812 *Hydrobius scabrosus* Horn (25) 4 Jy.-30 Jy.
2815 *Paracymus dissimilis* Horn (?) (1) 5 Aug.
2816 *Paracymus moratus* Horn (35) 29 Je.-30 Jy.

2826 *Paracymus rufiventris* Horn (3) 30 Jy.
2827 *Crenitis monticola* Horn (7) 17 Jy.-18 Jy.
2855 *Laccobius ellipticus* Lec. (3) 12 Jy.-23 Jy.
*2867 *Sphaeridium scarabaeoides* L. (1) 19 Jy.
2876 *Cercyon praetextatus* Say (2) 17 Jy-23 Jy.
2885 *Cercyon pygmaeus* Illig. (1) 18 Jy.
2888 *Cercyon tristis* Illig. (2) 4 Jy.

Family Silphidae.

2918a *Necrophorus pustulatus* var. *melsheimeri* Kby. (1) Aug. 31.
2935 *Pteroloma forsstroemi* Gyll. (1) 1 Jy.

Family Staphylinidae.

3285 *Micropeplus laticollis* Makl. (1) 18 Jy.
3299 *Siagonum punctatus* Lec. (2) 6 Aug.
Anthobium sp. (3) 10 Jy.-20 Jy.
3393 *Phloeonmus lapponicus* Zett. (1) 13 Jy.
3424 *Acidota crenata* Fab. (2) 8 Aug.-10 Aug.
3433 *Unamis truncata* Csy. (?) (1) 18 Jy.
Unamis near *fulvipes* (6) 18 Jy.
3438 *Tilea longipalpus* Csy. (6) 18 Jy.-1 Aug.
3443 *Orobanus simulator* Lec. (1) 15 Jy.
Orobanus n. sp. (2) 18 Jy.
3448 *Pelecomalium testaceum* Mann. (4) 6 Jy.
3453 *Pelecomalium puberulum* Fauv. (1) 15 Jy.
3469 *Geodromicus integer* Csy. (6) 3 Jy.-27 Jy.
3482 *Ancyrophorus biimpressus* Makl. (16) 18 Jy.
3483 *Ancyrophorus planus* Lec. (probably) (2) 12 Jy.-23 Jy.
3579 *Oxytelus invenustus* Csy. (5) 4 Jy.-6 Jy.
Bledius n. sp. (2) 10 Jy.
3711 *Stenus bipunctatus* Er. (6) 15 Jy.-23 Jy.
Stenus sp. near *sectator* (1) 12 Jy.
Stenus sp. near *militaris* (1) 22 Jy.
3757 *Stenus militaris* Csy. (1) 31 Jy.
3787 *Stenus stygicus* Say (3) 15 Jy.
Stenus sp. (1) 31 Jy.
4041 *Lathrobium montanicum* Csy. (14) 30 Je.-5 Aug.
4285 *Nudobius cephalus* Say (2) 6 Aug.
4351 *Baptolinus macrocephalus* Nordm. (2) 10 Jy.-25 Jy.
4364 *Neobisnius paederoides* Lec. (1) 14 Jy.
4403 *Philonthus hepaticus* Er. (1) 22 Jy.
4408 *Philonthus lacustris* Csy. (probably) (1) 22 Jy.
4470 *Philonthus nigritulus* Grav. (4) 23 Jy.
Philonthus sp. (1) 15 Jy.
4570 *Heterothrops carbonatus* Fall (?) (1) 14 Jy.
4575 *Quedius laevigatus* Gyll. (4) 6 Aug.
4579 *Quedius molochinus* Grav. (5) 4 Jy.-23 Jy.
4595 *Quedius peregrinus* Grav. (4) 10 Jy.-12 Jy.

4653 *Tachinus tachyporoides* Horn (6) 12 Aug.-21 Aug.
4655 *Tachinus angustatus* Horn (1) 21 Jy.
Aleocharinae (numerous) unnamed.

Family Pselaphidae.

6303 *Reichenbachia albionica* Mots. (1) 15 Jy.

Family Histeridae.

6596 *Hister abbreviatus* Fab. (2) 10 Jy.-13 Jy.
Plegaderus sp. (1) 6 Jy.
6831 *Saprinus oregonensis* Lec. (3) 4 Jy.
6831a *Saprinus oregonensis distinguendus* Mars. (1) 13 Jy.

Family Cantharidae.

Podabrus pruinosus Lec. (1) 15 Jy.
7069 *Podabrus scaber* Lec. (probably) (1) 16 Jy.
7078 *Podabrus piniphilus* Esch. (13) 4 Jy.-23 Jy.
Podabrus excursus Fall (7) 13 Jy.-29 Jy.
Podabrus falli Hopping (1) 10 Jy.
Podabrus fissilis Fall (5) 29 Jy.
Podabrus tetragonoderus Fall (2) 12 Jy.-30 Jy.
Podabrus sp. (1) 18 Jy.
Podabrus sp. (2) 15 Jy.-21 Jy.
Podabrus sp. (2) 15 Jy.
7118 *Cantharis oregonus* var. (?) (1) 28 Je.
7147 *Silis difficilis* Lec. (3) 15 Jy.-18 Jy.
Silis sp. (1) 15 Jy.
Malthodes sp. (1) 10 Jy.

Family Melyridae.

7467 *Dasytes hudsonicus* Lec. (12) 10 Jy.-23 Jy.
Dasytes sp. near *dissimilis* (1) 23 Jy.
Dasytes sp. (15) 3 Jy.-6 Aug.
7503 *Dolichosoma fovicollis* Kby. (3) 28 Je.- 12 Jy.

Family Cleridae.

7583 *Thanasimus monticola* Wolc. (1) 13 Jy.
7587 *Thanasimus undulatus* Say. (4) 11 Jy.-27 Jy.
7603 *Enoclerus spegeus* Fab. (2) 16 Jy.-13 Aug.
7627 *Trichodes ornatus* Say. (19) 5 Jy.-29 Jy.
7629 *Trichodes nutalli* Kby. (1) 3 Jy.
7642 *Hydnocera subfasciata* Lec. (1) 21 Jy.

Family Cephaloidae.

7747 *Cephaloon lepturides* Newn. (1) 4 Jy.
7749 *Sponidium tenuicorne* Lec. (8) 9 Jy.-21 Jy.

Family Mordellidae.

7939 *Anaspis atrata* Champ. (5) 12 Jy.-22 Jy.
7943 *Anaspis rufa* Say. (9) 10 Jy.-27 Jy.
Larisia nigricolor Lilj. (in manuscript) (8) 15 Jy.-29 Jy.
Mordella sp. (13) 4 Jy.-27 Jy.

Family Meloidae.

Epicauta sp. (1) 10 Jy.
Epicauta sp. (2) 10 Jy.
8067 *Lytta cyanipennis* Lec. (1) 5 Jy.

Family Anthicidae.

Anthicus sp. near *punctulatus* (1) 9 Jy.
8427 *Anthicus auriger* Csy. (3) 9 Jy.-18 Jy.
8430 *Anthicus junctus* Csy. (3) 9 Jy.-15 Jy.

Family Elateridae.

8636 *Limonius nitidulus* Horn. (6) 28 Je.-30 Jy.
8708 *Ludius sjaelandicus* Muller (1) 3 Jy.
8714 *Ludius protractus* Lec. (1) 15 Jy.
8732 *Ludius umbricola* Esch. (1) 12 Jy.
8733 *Ludius caricinus* Germ. (1) 4 Jy.
8741 *Ludius insidiosus* Lec. (2) 9 Jy.-12 Jy.
8763 *Ludius propola* Lec. (1) 18 Jy.
8771 *Ludius fallax* Say. (16) 4 Jy.-6 Aug.
8777 *Ludius aereipennis* Kby. (4) 12 Jy.-23 Jy.
8784 *Ludius breweri* Horn. (34) 1 Jy.-22 Jy.
Cryptohypnus sp. near *hyperboreus* Gyll. (1) 10 Jy.
8828 *Cryptohypnus nocturnus* Esch. (1) 3 Jy.
8828b *Cryptohypnus nocturnus bicolor* Esch. (15) 10 Jy.-8 Aug.
8831 *Cryptohypnus lecontei* Leng. (9) 14 Jy.-23 Jy.
8832 *Hypnoidus striatulus* Lec. (3) 10 Jy.-12 Jy.
8838 *Hypnoidus caurinus* Horn. (4) 14 Jy.-18 Jy.
8841 *Hypnoidus tumescens* Lec. (3) 14 Jy.-23 Jy.
Hypnoidus sp. near *musculus* (5) 8 Jy.-12 Jy.
Hypnoidus n. sp. (1) 10 Jy.
8904 *Betarmon bigeminatus* Rand. (2) 15 Jy.
8930 *Elater behrensi* Horn (4) 6 Jy.-12 Jy.
8963 *Elater nigrinus* Hbst. (4) 9 Jy.-30 Jy.

Family Melasidae.

9179 *Anelastes druryi* Kby. (1) 8 Aug.

Family Buprestidae.

9370a *Buprestis maculativentris rusticorum* Kby. (5) 12 Aug.
9377a *Buprestis fasciata langi* Mann. (1) 19 Jy.
9387 *Melanophila fulvoguttata* Harris (3) 13 Aug.
9387a *Melanophila fulvoguttata drummondi* Kby. (27) 4 Jy.- 13 Aug.
9394 *Anthaxia aeneogaster* Cast. (28) 1 Jy.-26 Jy.
9458 *Chrysobothris trinervia* Kby. (1) 12 Aug.

Family Dascillidae.

9657 *Macropogon piceus* Lec. (2) 9 Jy.-23 Jy.

Family Helodidae.

9695 *Cyphon concinnus* Lec. (4) 3 Jy.-10 Jy.
9698 *Cyphon variabilis* Thunb. (1) 15 Jy.

Family Dermestidae.

Perimegatoma cylindrica Kby. (1) 10 Jy.

Family Byrrhidae.

9856 *Tylicus subcanus* Lec. (1) 19 Jy.
9867 *Byrrhus cyclophorus* Kby. (2) 21 Jy.
Byrrhus sp. (1) 23 Jy.
Byrrhus sp. (3) 21 Jy.

Family Ostomidae.

9998 *Calitys scabra* Thunb. (1) 12 Aug.

Family Cryptophagidae

10370 *Antherophagus ochraceus* Melsh. (1) 9 Aug.

Family Phalacridae.

10756 *Phalacrus penicillatus* Say. (1) 10 Jy.

Family Coccinellidae.

11163 *Hippodamia parenthesis* Say (4) 28 Je.-30 Jy.
11171 *Hippodamia glacialis* Fab. (3) 21 Jy.
11173 *Hippodamia convergens* Guer. (1) 14 Jy.
11175 *Hippodamia quinquesignatus* Kby. (8) 28 Je.-14 Jy.
11181 *Coccinella trifasciata* L. (1) 14 Jy.
11185 *Coccinella transversoguttata* Fald. (1) 6 Aug.
11187 *Coccinella monticola* Muls. (1) 4 Jy.

Family Tenebrionidae.

11669 *Phellopsis porcata* Lec. (1) 11 Aug.
Hypophloeus praetemissa Fall (2) 13 Jy.-6 Aug.

Family Anobiidae.

12711 *Microbregma emarginatum* Duft. (1) 13 Aug.
12852 *Caenocara scymnoides* Lec. (1) 21 Jy.

Family Bostrichidae.

12908 *Stephanopachys substriatus* Payk. (1) 30 Jy.
12921 *Rhizopertha pusilla* Fab. (2) 30 Jy.

Family Cisidae.

Cis sp. (1) 12 Aug.

Family Scarabaeidae.

13099 *Aegialia lacustris* Lec. (2) 19 Jy.
13109 *Aphodius hamatus* Say (16) 28 Je.-28 Jy.
13119 *Aphodius fimetarius* L. (7) 4 Jy.-19 Jy.
13122 *Aphodius aleutus* Esch. (11) 6 Jy.-30 Jy.
13129 *Aphodius anthracinus* Lec. (25) 12 Jy.-9 Aug.
13132 *Aphodius vittatus* Say (5) 4 Jy.-27 Jy.
13186 *Aphodius leopardus* Horn (1) 12 Jy.
13191 *Aphodius cruentatus* Lec. (1) 28 Je.

Family Cerambicidae.

14097 *Tragosoma depsarium* L. (3) 13 Jy.-16 Jy.
14100 *Spondylis upiformis* Mann. (5) 4 Jy.-14 Jy.
14112 *Asemum atrum* Esch. (11) 3 Jy.-2 Aug.
14120 *Nothorhina aspera* Lec. (1) 11 Aug.
14124 *Tetropium cinnamopterum* Kby. (2) 12 Aug.
14128 *Tetropium velutinum* Lec. (1) 12 Aug.

14131 *Criocephalus productus* Lec. (1) 30 Jy.
14132 *Criocephalus agrestis* Kby. (2) 24 Jy.-27 Jy.
14135 *Criocephalus asperatus* Lec. (2) 19 Jy.-26 Jy.
14298 *Rhagium lineatum* Oliv. (1) 8 Jy.
14302 *Leptalia macilenta* Mann. (1) 21 Jy.
14340 *Stenocorus vestitus* Hald. (1) 14 Jy.
14342 *Stenocorus brevicollis* Csy. (?) (3) 28 Je.
14347 *Pachyta liturata* Kby. (9) 3 Jy.-30 Jy.
14384 *Leptacmaeops subpilosa* Lec. (33) 4 Jy.-21 Jy.
14396 *Acmaeops pratensis* Laich. (17) 13 Jy.-16 Aug.
14412 *Gaurotes cressoni* Bland (13) 1 Jy.-16 Aug.
14424 *Anoplodera 6-maculata* L. (21) 11 Jy.-1 Aug.
14447 *Anoplodera canadensis* Fab. (1) 12 Aug.
14459 *Grammoptera subargentata* Kby. (4) 10 Jy.-22 Jy.
14466 *Anoplodera pubera* Say. (4) 10 Jy.-14 Jy.
14504 *Anoplodera tibialis* Lec. (21) 11 Jy.-30 Jy.
14516 *Anoplodera nigrella* Say. (7) 4 Jy.-30 Jy.
14520 *Anoplodera chrysocoma* Kby. (21) 5 Jy.-27 Jy.
14533 *Anoplodera aspera* Lec. (17) 3 Jy.-26 Jy.
14578 *Desmocerus piperi* Webb. (32) 6 Jy-27 Jy.
14606 *Gonocallus collaris* Lec. (19) 10 Jy.-30 Jy.
14640 *Phymatodes dimidiatus* Kby. (4) 8 Jy.
14691 *Xylotrechus undulatus* Say. (10) 8 Jy.-5 Aug.
14713 *Neoclytus muricatulus* Kby. (3) 29 Jy.
14904 *Monochamus scutellatus* Say. (22) 8 Jy.-2 Aug.

Family Chrysomelidae.

*15219d *Orsodacne atra tibialis* Kby. (14) 28 Je.-13 Jy.
*15219e *Orsodacne atra trivittata* Lec. (21) 4 Jy.-13 Jy.
15220 *Syneta carinata* Mann. (3) 4 Jy.-21 Jy.
15221 *Syneta simplex* Lec. (1) 8 Jy.
15223 *Syneta ferruginea* Germ. (6) 6 Jy.-17 Jy.
15393 *Pachybrachys peccans* Suffr. (3) 10 Jy.
15569 *Graphops marcassitus* Cr. (1) 21 Jy.
*15604b *Adoxus obscurus villosulus* Schrank (11) 5 Jy.-26 Jy
*15634 *Entomoscelis adonidis* Pallas (1) 13 Jy.
15685 *Chrysomela montevagans* Lec. (2) 21 Jy.
*15708 *Lina interrupta* Fab. (3) 14 Jy.-23 Jy.
Lina interrupta aeneicollis Schaff. (1) 18 Jy.
*15709 *Lina tremulae* Fab. (1) 5 Jy.
15713 *Phytodecta arctica* Mann. (1) 23 Jy.
15752 *Galerucella punctipennis* Mann. (4) 15 Jy.-18 Jy.
15752a *Galerucella punctipennis* Mann. var. (10) 18 Jy.
15834 *Luperodes nigrovirescens* Fall. (6) 13 Jy.-26 Jy.
15906 *Disonycha triangularis* Say. (2) 18 Jy.
*15916 *Haltica bimarginata* Say. (5) 13 Jy.-18 Jy.
15937 *Haltica evicta* Lec. (6) 6 Jy.-18 Jy.

Family Curculionidae.

16336 *Auletes congruus* Walk. (10) 28 Je.-21 Jy.
16348 *Rhynchites bicolor* Fab. (6) 4 Jy.-13 Jy.
16359 *Rhynchites cyanellus* Lec. (23) 10 Jy.-21 Jy.
Sitona sp. near *tibialis* (1) 28 Je.
Lepyrus oregonus tesselatus Van Dyke (1) 10 Jy.
16678 *Brachyrhinus ovatus* L. (1) 4 Jy.
Listronotus sp. near *nebulosus* (1) 8 Jy.
16810 *Hyperodes ulkei* Dietz (1) 10 Jy.
Hyperodes sp. (1) 21 Jy.
Pissodes sp. near *rotundatus* possibly *P. burkei* Hopk. (1) 11 Jy.
16889 *Phyllotrox nubifer* Lec. (3) 30 Je.-12 Jy.
17141 *Magdalis alutacea* Lec. (3) 18 Jy.-26 Jy.
17144 *Magdalis aenescens* Lec. (1) 4 Jy.
Anthonomus sp. near *effetus* (1) 10 Jy.
17245 *Anthonomus scutellatus* Gyll. (2) 14 Jy.-21 Jy.
17258 *Anthonomus rufipes* Lec. (3) 28 Je.-12 Jy.
17284 *Anthonomus decipiens* Lec. (2) 10 Jy.-13 Jy.
17285 *Anthonomus canus* Lec. (?) (1) 28 Je.
17347 *Orchestes rufipes* Lec. (2) 15 Jy.-21 Jy.
17791 *Ceutorhynchus omissus* Fall (1) 3 Jy.
Ceutorhynchus sp. (1) 3 Jy.
17827 *Pelenomus cavifrons* Lec. (1) 30 Je.
18018 *Carphonotus testaceus* Csy. (2) 6 Jy.
18062 *Rhyncolus oregonensis* Horn (?) (2) 10 Jy.-17 Jy.
18070 *Rhyncolus brunneus* Mann. (1) 9 Jy.
18175 *Scolytus unispinosus* Lec. (?) (1) 15 Jy.
18228 *Dendroctonus murrayanae* Hopk. (6) 13 Jy.-6 Aug.
18231 *Dendroctonus valens* Lec. (1) 1 Aug.
Pityophthorus sp. (1) 6 Aug.
Pityphthorus sp. (1) 26 Aug.
Ips sp. (2) 13 Jy.-1 Aug.
18539 *Dryocoetes septentrionis* Mann. or *confusus* (2) 13 Jy.-6 Aug.

NOTES ON CANADIAN DIURNAL LEPIDOPTERA*.

BY J. MCDUNNOUGH,
Ottawa, Ontario.

Papilio machaon var. *aliaska* Scud. In the proceedings of the U. S. National Museum, 1932, LXXXI, 1-15, Austin H. Clark discusses at some length the racial variability of *Papilio machaon* in North America, creating what he designates as two new subspecies. A careful study of the eighteen specimens of *machaon* in the Canadian National Collection forces me to the belief that Clark's remarks are in need of considerable revision and that his conclusions were based on an inadequate number of specimens, worn material, and a failure to take into consideration a certain amount of sexual dimorphism that occurs in the species; it

*Contribution from the Division of Systematic Entomology, Entomological Branch, Dept. of Agric., Ottawa.

might also be queried as to whether his idea of a subspecies is the usual one.

Clark himself in his comments on *aliaska* (pp. 11-14) agrees that this subspecies is a very variable one and practically concedes that the points on which he has separated it from his new race *hudsonianus* do not always hold; in his key (p. 15) he separates it on the broad dark border of hind-wings which approaches quite closely the discal dash; the irregularity of the black streaks on the underside, limiting this border internally; and the greater length of the tails

I frankly confess I can make nothing of this last character and fail to see how the author arrived at it as his figured specimens of the new subspecies (Pl. 3, 4) are practically tailless, due to poor condition. An examination of the series of specimens figured on Plates 5-8 is also certainly not calculated to prove the value of his other two characters as of racial importance; while fig. 6, Pl. 5 and figs. 2-4, Pl. 7 support the first mentioned point, fig. 1, Pl. 5 and fig. 1, Pl. 7 just as certainly do not and his second character is distinctly refuted by figs. 2 and 5, Pl. 6, and figs. 1 and 6, Pl. 8. I am, however, inclined to think that the first point possesses a certain amount of value, since, in five specimens 2 ♂, 3 ♀) before me which I am placing as undoubted *aliaska*, the character holds; combined with it are (1) the large size and more quadrate shape of the yellow submarginal spots on both wings (mentioned by Clark pp. 12, 13), (2) the large size of the orange anal spot on hind-wings, which is almost circular, (3) the even width of the black border along lower edge of this anal spot, especially in the female, no tendency towards expansion into an oval spot being evident. It is probable that none of these characters is entirely constant, but the combination of several of them may prove of value; Clark's figures on Pl. 5, figs. 2 and 5 show these points admirably. It might further be noted that on the underside of forewings the submarginal yellow spots are fused together into a band as stated by Clark (p. 7); this may be constant in *aliaska* but, as I shall show later, is a variable feature in other so-called subspecies. Our five specimens above mentioned are from points in Yukon Territory either near the Alaskan border or along the Yukon river.

The variety *hudsonianus* Clark is based on two females from Kettle Rapids, Hudson Bay Ry., Man., and one male from Hymers, Ont. All these specimens were in the Barnes collection at the time I was curator, and if my memory serves me rightly, were all considerably worn and tattered; certainly the figured type (Pl. 2) is in such condition. The distinctive characters are dealt with on page 6 of Clark's paper and none of those mentioned in the first two paragraphs appear to have much weight, the wing shape being purely sexual and the lack of olive scaling due to the rubbed condition of the specimens; other points are individual and not racial. Of the points mentioned in the succeeding paragraphs the size of the yellow submarginal spots and the apical thickening of the black line bordering the orange anal spot seem, in the light of our material, most important from a racial standpoint; the lack of yellow suffusion over the submarginal spots on underside of fore-wing, causing them to stand out separately as on the upper side, a feature used by Clark in his key (p. 14), can however, certainly not be used as a racial character. The specimen listed by Clark (p. 7) under the heading of *hudsonianus* from Nagagami Riv., Ont. (Wilson, 1904) is before me and shows these spots suffused into a band, much as in *aliaska;* further in four males

from Riding Mts., Man., one shows the suffusion, two have the spots touching in the apical section of the wing and only one shows them as widely separated as in Clark's figure (Pl. 3). In all these specimens, however, and also in a male from Ft. Chipewyan, Alta., the presence of an oval expansion at the termination of the black line bordering the orange anal spot is quite noticeable, the extent of the orange area being generally considerably reduced; the submarginal yellow spots on upper side are reduced in size as compared with *aliaska* and, in our material at least, the discal dash of hind-wing is widely removed from the dark outer border. The amount of orange shading on underside of hind-wings between the discal dash and the black outer border is very variable. I believe that in the light of the above combination of characters the name *hudsonianus* Clark may stand in a subspecific sense for a race, not yet possibly quite definitely established, and occupying roughly the territory between Hudson Bay and the Mackenzie River with its tributaries.

As regards *petersii,* the second subspecies established by Clark, I cannot but feel that the author has been rather premature in his conclusions. The name is based on a single male specimen, in decidedly worn condition, (see Pl. 4) captured on the Koyukuk river, Central Alaska by Capt. W. J. Peters; this specimen was taken along with others of typical *aliaska* (p. 9) and these circumstances of its capture would certainly point rather to its being an individual variant than to its possessing racial points of divergence from *aliaska.* The specimen is in such poor condition that, in my opinion, no adequate conception of the extent of the yellow or blue suffusion nor of the original shade of yellow, (points emphasized by Clark (p. 8)) could have been secured. The feature that the forewings below show a broad yellow submarginal band, instead of the row of dots of *hudsonianus,* I have already shown to be inconstant; this and the distance of the discal streak from the marginal band on secondaries can be matched by specimens of *hudsonianus;* on the other hand the other features used in the key (p. 15) point to *aliaska.* One could established dozens of worthless "subspecies" by using combinations of characters such as those used by Clark and the sensible thing to do would be to sink *petersii* as a synonym of *aliaska.*

Among other specimens before me I might mention a male from the north fork of the Klondike river, Yukon Territory (3000 ft.) which on the underside has the submarginal yellow spots as in Clark's diagnosis of *hudsonianus* but in other respects is closer to *aliaska,* except that the subterminal spots on hind-wing are somewhat smaller and more as in Clark's figure of *petersii.* Again a male from Cambre Lake, in the far north of the North West Territories, has the anal orange spot and the subterminal band of underside as in *aliaska,* but other details more as in *hudsonianus.*

Papilio brevicauda Saund. Among the specimens secured by Mr. W. J. Brown on his collecting trip in the interior of the Gaspe peninsula in 1933 was a small series of this species which differed noticeably from the typical Newfoundland form, as figured by Edwards and Holland, in the somewhat smaller size; less robust appearance; the *diminution* in size of the yellow spots composing the extra-discal row on both wings, particularly, however, on the hind-wings and in the female sex; and the fact that these spots showed *no* orange shading on the upper side. At first it was thought these might be *anticostiensis* Stkr., but a

study of Strecker's figure of a female showed the spots to be as broad and extended as in the typical form, the lack of orange shading being apparently the only point of distinction from the type form.

Mr. Brown's specimens were all taken about 40 miles inland on the slopes of Mt. Lyall, Gaspe Co., at an altitude of about 1500 feet in a country heavily timbered with black and white spruce. He reports further that a number of worn specimens were seen flying on the upper slopes of Mt. Albert when he visited this region late in July and one good male and several tattered ones were secured by Mr. E. Watson, who accompanied him on this excursion. Out of eight specimens (5 ♂, 3 ♀) only two males showed a width of extra-discal banding on the hind wings at all comparable to that of typical *brevicauda;* the tails are short but in the female appear to be slightly longer and narrower than in *brevicauda*; racial characters seem, therefore, to have been fairly well established and I propose the name GASPEENSIS n. var. for this interesting form. The types are as follows:

Holotype—♀, Mt. Lyall, Gaspe Co. Que., July 6, 1933, (W. J. Brown); No. 3735 in the Canadian National Collection, Ottawa.

Allotype—♂, same locality, June 27.

Paratypes—2 ♂, 2 ♀, same locality, June 25, July 3, 5; 1 ♂, Mt. Albert, Gaspe Co., Que., 3500 ft., July 21, (E. Watson).

Oeneis chryxus var. *calais* Scud. One of the most interesting results of the insect faunal survey conducted by Mr. W. J. Brown in 1933 on the Gaspe Peninsula was the capture of a good series of what I believe to be the true *calais* Scud. on the upper slopes of Mt. Albert, one of the higher peaks of the Shickshock range; these specimens were taken at an altitude of betweeen 3000 and 3200 feet, just above tree level, on steep slopes more or less covered with dwarf spruce and labrador tea.

The name *calais* Scud. (1865, Proc. Ent. Soc. Phil. V, 7) was based on a single female, stated to have been captured on Albany river, Hudson Bay; this locality was corrected later (*vide* Scudder, Butt. N. Am. III, 1779) to Rupert House, an old Hudson Bay Post situated in the southeast corner of James Bay, and the collector's name given as Drexel. As, on the basis of other material, Drexel (or more correctly Drexler) is known to have collected at Rupert House (*vide* Clark, 1932, Proc. U. S. N. M. LXXXI, 1-3) I believe we can accept the east coast of James Bay as the type locality for *calais*.

The type specimen has been twice figured, once by Edwards (Butt. N. Am. III, *Chionobas*, Pl. II, figs. 3, 4) and recently by Holland (Butterfly Book, revised ed., Pl. LXII, fig. 7), the latter being a colored photograph of the upper side and showing distinctly that the specimen is decidedly worn. Edwards' figure of the upper side is probably an attempt to depict the specimen in its original unsullied condition and the basal two-thirds of both wings is shown to be a much more uniform and deeper brown than in Holland's figure. Apart from Edwards' citation (1883, Can. Ent. XV, 44) of the species from Carbonear, Newfoundland on the strength of a colored figure received from Gosse, *calais* remained unrecognized until quite recently when the name was applied to a race of *chryxus* occurring in late May in the Go Home Bay region of Georgian Bay and in the vicinity of Gull Lake, Haliburton Co., Ont. As this Ontario race shows a number of

points, distinguishing it from our Gaspe series, it was a matter of some importance to determine to which the name *calais* could be best applied, and after a careful study of the original description and the available figures I am of the opinion that the Gaspe specimens match these much better than do the Ontario ones. Until, therefore, material is available from the type locality for study, I propose to consider these Gaspe specimens as representing *calais*. It might be noted that while the Gaspe peninsula is 500 miles or more east of Rupert House, the latitude of the two places is almost identical and the slightly more southerly location of the former district is amply made up for by the higher altitude at which the specimens were taken; the type of country and the general climatic conditions are probably very similar in both places. On the other hand the known localities for the Ontario race are more than 400 miles due south of Rupert House, a fact that must be given considerable weight when considering geographical variation.

A study of male genitalia would indicate that *calais* has been correctly placed as a race of *chryxus*. It is characterized by the general dark smoky-brown color of the basal two-thirds of both wings on the upper side. In the male this area on the fore wings shows scarcely a trace of yellow-brown suffusion and in consequence the sex-mark is improminent and only distinguishable in certain lights; the hind wings are more liable to be somewhat suffused in this area with yellow-brown. The extra-discal pale band varies in color from light yellow-brown to rather deep mahogany-brown and the spots are normally much as in Edward's figure, the middle one tending toward reduction and occasionally complete elimination. Of the four females before me one is an excellent match for Edward's figure, showing the basal area fully as dark; other specimens (somewhat worn) show a condition more nearly approaching Holland's figure; in all, however, the outer edge of the dark area is very strongly defined in smoky-brown. The number of black spots in the yellow-brown band is variable; one specimen shows four distinct spots as well as minute dark dots in the other interspaces on the fore wing, and two spots on the hind wing. On the underside both sexes are quite similar and our series on the whole matches quite closely with Edward's figure; apart from those in the cell the transverse striations on the fore wing are few and mostly confined to the apical portion of the extra-discal band; the broad median band of the secondaries while showing considerable pale shading centrally is quite distinctly defined on both inner and outer edges by a narrow band of blackish scaling, about 1 mm. in width, and generally relieved outwardly by a varying amount of grey-white suffusion. The dark eye-spot near anal angle is present and generally pupilled by a white dot; often this spot is preceded by a row of minute whitish dots in the interspaces which occasionally are finely encircled with black and at other times are more or less obscured by the general marbling.*

Following the above discussion of *calais* I should like to call attention to the figure of the type of *caryi* Dyar given in the revised edition of Holland's Butterfly Book (Pl. LXXV, figs. 10, 10a). Judging by the photograph I should be inclined to place this name as a race of *chryxus* and not of *norna* as at present

*Since writing the above I have been enabled, through the courtesy of the Director of the Carnegie Museum, Pittsburgh, to study the type specimen of **calais** and find that my conclusions, as expressed in the above paragraphs, are correct.

listed; the type is from Smith's Landing on the Slave river and I have before me three males and a female from the Great Slave region (a point slightly north of the above locality) which are undoubtedly, by genitalia, referable to *chryxus* and which on the whole do not match badly with the photograph of *caryi*. I have also examined a pair from Port Churchill and another pair from the Riding Mts., Man., which would seem to fit in here. I would suggest that *caryi* is a race of *chryxus* occupying the vast area between the Mackenzie river and Hudson Bay and extending south to the Riding Mts. of Manitoba; it is characterized by the extension of the smoky-brown areas on both wings at the expense of the extra-discal bandings which are reduced to a poorly defined suffusion of reddish-brown color. On the underside of hind wings the broad median band is almost entirely filled with blackish scaling and is strongly bordered with white. A somewhat similar form, I believe, occurs at high altitudes in Colorado. The correctness of my suggestion will have to be verified by an examination of the genitalia of the type of *caryi* in the United States National Museum, but this should be easily done by one of the scientists of that institution.

As compared with the two preceding races of *chryxus* the Ontario race already mentioned shows in general much more of the yellow-brown color on the upper side, some specimens being almost entirely of this color with only a faint indication of an extra-discal dark line crossing the wing and representing the outer margin of the dark basal area of other races. In the darkest male specimens the sex-mark is still distinct, due to yellow-brown shading in the cell, and in pale specimens it is strikingly noticeable. The eye-spots are somewhat reduced in size and frequently in number, several of the males before me showing only a single spot, situated near apex of fore wing. The underside of both sexes is characterized by the marked increase in the number of transverse striations, which extend over the whole area of the fore wing and in some instances are very numerous; the dark outer border and contrasting apical marbling are in consequence less prominent than in *calais*. The increase in the pale and dark striations on the hind wings tends to obscure the median band so that it stands out much less prominently than in *calais*; in most cases the edges of this band show less irregularity of outline in the costal area but this is a character of doubtful value, due to the great variation in individual specimens. The size is somewhat smaller than *calais*, the males averaging 40 mm. wing expanse and the females 45-50 mm. For this race I propose the name CHRYXUS var. STRIGULOSA n. var. and have chosen as types a male and female which are more or less midway between the two extremes of color and underside striation.

The types are as follows:

Holotype—♂, Gull Lake, (Raggedy Cr.) near Minden, Ont., May 25, 1931, (G. S. Walley); No. 3732 in the Canadian National Collection, Ottawa.

Allotype—♀, Gull Lake, (Miners Bay), May 28, 1931, (J. McDunnough).

Paratypes—7♂, 6♀, same locality and collectors; 1♂, 4♀, Honey Harbor, Georgian Bay, Ont., June 6, 1932, (G. S. Walley).

The adult frequents dry, grassy hillsides or open spaces in pine woods and is on the wing during the last week in May; probably the early date of flight is partially responsible for the fact that it has been recorded from so few localities.

Oeneis taygete Hbn. This species was found abundantly by Mr. Brown

on the flat treeless summit of Mt. Albert at an altitude of 3500-3750 feet. According to the collector it never occurred together with *chryxus* var. *calais* but always several hundred feet higher. Its capture south of the St. Lawrence river is a new record for the Province of Quebec. Although the genitalia of the two species show practically no constant points of distinction, *taygete* may easily be recognized, even on the wing, by its unicolorous smoky-brown upper side without any eye-spots.

NOTES ON RHYNCOCEPHALUS SACKENI, Will., A CORRECTION (NEMESTRINIDAE DIPTERA).

BY G. J. SPENCER,
University of British Columbia.

At the 30th Annual Meeting of the Entomological Society of British Columbia in March, 1931, I presented a paper entitled "The Oviposition Habits of *Rhyncocephalus sackeni* Will." which was published in the Proceedings of that year. Again in March, 1932, I read another paper before the same society, "Further Notes on *Rhyncocephalus sackeni* Will.", which was published in the 1932 Proceedings. Furthermore, a series of 91 of these flies was made the subject of a third paper, "Variations within the species of the Nemestrinid Fly *Rhyncocephalus sackeni* Will.", by one of my students, Mr. Kenneth Graham, which was published in the Canadian Entomologist, Vol. LXIV, No. 7, p. 167.

Since I have received many letters concerning these papers from widely separated points, it is necessary to publish, as widely as possible, a correction to all of them, concerning the identity of the flies in question. The specimens about which the notes were written were identified for me by a leading Dipterologist under the name published. However, in February, 1933, I happened to send a series of these flies to Dr. J. Bequaert of Harvard University School of Tropical Medicine who promptly informed me that they are not *Neorhyncocephalus sackeni* but the much rarer *Parasymmictus clausus* (Osten Sacken) and that the occurrence of these flies at Riske Creek, Chilcotin, B. C. (Lat. 52° and Long. 122° 40′) seems to be the northernmost record for any member of the family anywhere in the world.

I am deeply indebted to Dr. Bequaert for calling my attention to the correct name of these flies and I will be glad if all those interested will make the necessary bibliographical correction.

THE AMERICAN SPECIES OF DALOPIUS ESCH. (ELATERIDAE, COLEOP.)*

BY W. J. BROWN,
Ottawa, Ontario.

(Continued from Page 72.)

12. **Dalopius pallidus** n. sp.

Male. Length 5.8 mm. Reddish-yellow; the legs paler; the front, vertex, a large discal cloud on the pronotum, and the abdomen except the apical segment pale reddish-brown; each elytron pale reddish-yellow with the side and suture margined with blackish except in apical sixth; the lateral stripe occupying two intervals; the sutural stripe occupying four intervals at base, narrowed to apex.

Antenna surpassing the pronotal angle by the length of one and there-

quarters segments; the fourth segment three-fifths as long as the second and third united. Pronotum as long as wide, its posterior angles feebly produced. Propleuron feebly emarginate, not angulate. Elytron rounded at apex.

Length of aedeagus .85 mm.; the form as in *gartrelli* but with the apices of all the lobes less produced and less acute.

Female. Antenna surpassing the posterior angle by half the length of one segment.

Holotype—♂, Mer Bleue, Ont., June 13, 1932, (W. J. Brown); No. 3554 in the Canadian National Collection, Ottawa.

Allotype—♀, same data, found copulating with the holotype.

Paratypes—6♂, 6♀, same data; 1♂, same data, July 14, 1932; 1♂, 2♀, Blackburn, Ont., June 2 and 6, 1932, (W. J. Brown); 15♂, Arnprior, Ont., June 5 and 19, 1932, (W. J. Brown); 2♂, Normandale, Ont., June 4 and 14, 1931, (W. J. Brown); 1♀, Delhi, Ont., June 2, 1931, (W. J. Brown); 1♂, Simcoe, Ont., June 13, 1931, (W. J. Brown); 1♂, Bobcaygeon, Ont., May 31, 1931, (J. McDunnough); 1♂, 2♀, Point Pelee, Ont., June 3, 5 and 23, 1929 and 1931, (L. J. Milne, G. S. Walley, W. J. Brown); 4♂, 2♀, Toronto, Ont., June, 1927, June 29, 1926, and June 2, 1932, (L. J. Milne); 1♂, Irondale, Ont., July 1-15, 1928, (L. J. Milne); 1♀, Hillier, Prince Edward Co., Ont., June 10, 1911, (Evans); 2♂, Christina, Ont., June 30, 1932, (G. M. Stirrett); 1♂, 1♀, Sackville, N. B., July 5, 1928, (W. J. Brown); 2♂, Wright, Que., May 19, 1932, (W. J. Brown); 6♂, 7♀, Aylmer, Que., June 17 and 30, 1932, (W. J. Brown); 1♀, Knowlton, Que., June 24, 1929, (L. J. Milne); 1♂, 3♀, Miami, Man., June 26, 1916, (J. B. Wallis); 1♂, 3♀, Winnipeg, Man., May 13 and 20, 1911, (J. B. Wallis); 1♂, 21♀, Aweme, Man., April 25 to July 3, 1909 to 1930, (E. Criddle, N. Criddle, T. Criddle, R. H. Handford); 1♂, 1♀, Onah, Man., July 9, 1916, (J. B. Wallis); 1♂, 1♀, Rosebank, Man., June 16, 1917, (J. B. Wallis); 1♂, Lethbridge, Alta., June 19, 1930, (J. H. Pepper); 1♂, Wetaskiwin, Alta., July 20, 1928, (E. H. Strickland); 4♂, 7♀, Medicine Hat, Alta., May 3 to July 16, 1924 to 1930, (F. S. Carr and J. H. Pepper); 1♂, Edmonton, Alta., July 2, 1920, (F. S. Carr); 2♂, 2♀, Empress, Alta, June 4, 1926, (F. S. Carr).

The paratypes measure from 5 to 6.8 mm. The western specimens average a little smaller than the eastern. Occasionally in eastern specimens and often in western specimens, the pronotum lacks the central cloud, and the dark stripes of the elytron are reduced and reddish in color or absent. One specimen is reddish-brown and approaches *gentilis* in color. The elytron is feebly subtruncate in many specimens. The aedeagus measures from .74 to .88 and shows some variation in the form of the median lobe. Occasionally the lobe is subparallel near the apex rather than oval as in the type, but the postapical constriction is always distinct. The characters of the apices of the lobes are not striking, but they can be relied upon always to separate the present species from *gartrelli*, its closest ally. On account of its pale color and its size, *pallidus* is not likely to be confused with any eastern species. It differs from *parvulus* only in size, color, and in the characters of the aedeagus.

13. **Dalopius gartrelli** n. sp.

Male. Length 5.8 mm. Reddish-brown, the antennae and the apical margin and posterior angles of prothorax reddish-yellow; legs pale reddish-yellow.

Antenna surpassing the pronotal angle by the length of two and one-quarter segments; the fourth segment four-fifths as long as the second and third united. Pronotum as long as wide, its posterior angles feebly produced. Propleuron feebly emarginate, not angulate. Elytron subtruncate.

Length of aedeagus .89 mm.; the form as in *pallidus* but with the apices of the lobes more produced and acute.

Female. Antenna surpassing the pronotal angle by the length of one segment.

Holotype—♂, Summerland, B. C., May 26, 1932, (A. N. Gartrell); No. 3555 in the Canadian National Collection, Ottawa.

Allotype—♀, same data.

Paratypes—4♂, same data; 23♂, 19♀, same data, May 28, June 9, and September 26, 1932; 2♂, Creston, B. C., May 3, 1931, and July 18, 1932, (G. Stace Smith); 7♂, 18♀, Wynndel, B. C., April 17, 1932, (G. Stace Smith); 1♂, Cranbrook, B. C., May 17, 1922, (C. B. D. Garrett); 2♂, Oliver, B. C., May 2 and 21, 1923 and 1924, (C. B. Garrett and McN.); 1♂, Foulder, B. C., June, 1919, (S. Criddle); 1♂, 1♀, Keremeos, B. C., June 22 and 26, 1923, (C. B. Garrett); 1♂, Lillooet, B. C., 1919, (A. Phair); 7♂, 12♀, Vernon, B. C., April 15 to May 29, 1918 to 1929, (R. Hopping, I. J. Ward, W. Downes, E. P. Venables); 2♂, Enderby, B. C., April 20, 1921; 1♂, Okanagan Falls, B. C., May 28, 1924, (R. Hopping); 1♂, Osoyoos, B. C., May 21, 1924, (K. F. Auden); 1♀, Canford, B. C., June 1, 1931, (J. R. L. Howell); 7♂, 3♀, Cawston, B. C., May 27 and 29, June 20, and July 8, 1917, (W. R. S. Metcalfe); 5♂, 2♀, Golden, B. C., July 10, 1929, (F. S. Carr).

The paratypes measure from 5.8 to 7.6 mm. The color varies from reddish-yellow to reddish-brown. In a few specimens, the sutural margins of the elytra are a little darker, but the species is never distinctly vittate like *pallidus*. In many specimens, the apex of the elytron is rounded. In some females, the antenna surpasses the pronotal angle by two segments, in some males by nearly three segments. The aedeagus measures from .89 to 1.08 mm. The species is closely allied to the eastern *pallidus* but is more likely to be confused with *tristis*. The latter is usually much darker in color, and even in the palest specimens, the antennae, head, and pronotal disk remain very dark brown. In *gartrelli*, the antennae and legs are always reddish-yellow, and the head and pronotal disk are always the same shade as the elytra. The species may be recognized readily by its color.

14. **Dalopius luteolus** n. sp.

Male. Length 5.9 mm. Pale reddish; the basal segments of antennae, apical margin and posterior angles of prothorax, and legs pale reddish-yellow.

Antenna surpassing the pronotal angle by the length of three and one-half segments; the fourth segment three-fourths as long as the second and third united. Pronotum as wide as long, the posterior angles moderately produced. Propleuron moderately emarginate, not angulate. Elytron subtruncate at apex.

Length of aedeagus .89 mm.; the median lobe wider near the apex than at the base; the median struts always angulate.

Holotype— ♂, Saticoy, Calif.; No. 3556 in the Canadian National Collection, Ottawa.

Paratypes—3 ♂, same data.

The paratypes measure from 6 to 6.6 mm. and do not vary in color. In color, the species resembles only very pale examples of *gartrelli*. The aedeagus measures from .92 to 1.06 mm.

15. **Dalopius corvinus** n. sp.

Male. Length 6 mm. Black, the legs and pronotal angles not paler, a small rufescent area on each humeral umbone of the elytra.

Antenna surpassing the pronotal angle by the length of one and one-half segments, the fourth segment two-thirds as long as the second and third together. Pronotum nine-tenths as wide as long, its posterior angles rather feebly produced. Propleuron feebly emarginate, not angulate. Elytron rounded at apex.

Length of aedeagus .82 mm., the form much as in *usitatus* but with the median struts much stouter.

Female. Antenna surpassing the pronotal angle by the length of one segment.

Holotype— ♂, Saanich, B. C., May 16, 1929, (W. H. A. Preece); No. 3557 in the Canadian National Collection, Ottawa.

Allotype— ♀, same data, May 20, 1929.

Paratypes—3 ♂, 1 ♀, same data, April 28, 1930, May 5 and 20, 1929 and 1930, June 24, 1929; 1 ♂, Victoria, Vancouver Island; 1 ♂, 1 ♀, Victoria, B. C., May 23, 1928, and June 2, 1923, (W. Downes and K. F. Auden).

The paratypes measure from 6 to 6.7 mm. In several specimens, the legs are very dark reddish-brown. In two, the elytra are very feebly rufescent except near the margins, and in several, the humeral pale spot is absent. The aedeagus measures from .80 to .88 mm. In several specimens, the elytron is feebly subtruncate. The species differs from all other Canadian species by its color, which is truly black, except as noted above. Two Californian species, *validus* and *incomptus* are similar in color.

16. **Dalopius usitatus** n. sp.

Male. Length 6.2 mm. Black; the antennae and legs very dark reddish-brown; the anterior margin and posterior angles of the prothorax and the elytra dull red; the basal declivity of each elytron black.

Antenna surpassing the pronotal angle by the length of one and one-half segments, the fourth segment seven-tenths as long as the second and third united. Pronotum as wide as long, its posterior angles feebly produced. Propleuron feebly marginate, not angulate. Elytron truncate at apex.

Length of aedeagus .81 mm.; the form much as in *cornivus* but with the median struts less stout.

Holotype— ♂, Mammoth, Mono Co., Calif., May 9, 1919, *Pinus jeffreyi*; No. 3558 in the Canadian National Collection, Ottawa.

Paratypes— ♂, same data; 1 ♂, Tahoe, Calif., July 7, 1915, (R. Hopping).

The paratypes measure 6.2 and 6.5 mm. In the Tahoe specimen, the elytra are dark reddish-brown. The species resembles several others from California in color but can be identified without difficulty by the characters of the aedeagus.

17. **Dalopius insolens** n. sp.

Male. Length 5.9 mm. Very dark brown; the antennae reddish-brown, the basal segments, the anterior margin and posterior angles of the prothorax, and the legs reddish; each elytron with a reddish-yellow vitta; the vitta extending from the humeral umbone to apex, occupying three intervals, a little wider in apical third.

Antenna surpassing the pronotal angle by the length of two segments, the fourth segment two-thirds as long as the second and third united. Pronotum as long as wide, its posterior angles rather feebly produced. Propleuron feebly emarginate, not angulate. Elytron feebly subtruncate at apex.

Length of aedeagus .62 mm., the aedeagus unique in form.

Holotype—♂, Midday Valley, Merritt, B. C., June 22, 1924, (K. F. Auden); No. 3559 in the Canadian National Collection, Ottawa.

Paratypes—1 ♂, same locality, May 10, 1926, (E. Rendell); 1 ♂, Creston, B. C., April 14, 1930, (G. Stace Smith); 2 ♂, Cawston, B. C., June 24, 1917, (W. R. S. Metcalfe).

The paratypes measure from 5.4 to 6.7 mm. In three specimens, the elytral vitta does not quite attain the apex. In one, the vitta is a little narrower and in two a little wider than in the type. The specimen with the widest vittae resembles in color some examples of *asellus* and *fucatus*. The others resemble *vernus* and, on account of the color of their elytra, would not be confused readily with other western species. The aedeagus measures from .53 to .64 mm.

18. **Dalopius asellus** n. sp.

Male. Length 5.7 mm. Blackish, the basal segments of antennae, apical margin and posterior angles of prothorax, and the legs red; each elytron red with a sutural and a lateral vitta blackish, the vittae extending almost to apex, each occupying two intervals, the sutural extending to the humeral umbone at base, narrowed near apex.

Antenna surpassing the pronotal angle by the length of two segments, the fourth segment two-thirds as long as the second and third united. Pronotum as long as wide, its posterior angles rather feebly produced. Propleuron feebly emarginate, not angulate. Elytron truncate at apex.

Length of aedeagus .76 mm.; the apical portion of the lateral lobe elongate.

Female. Antenna surpassing the pronotal angle by half the length of a segment.

Holotype—♂, Copper Mountain, B. C., June 8, 1930, (G. Stace Smith); No. 3560 in the Canadian National Collection, Ottawa.

Allotype—♀, same data, June 23, 1930.

Paratypes—8 ♂, same data, June 8, 15, and 23, 1930; 1 ♂, Chilcotin, B. C., May 23, 1921, (E. R. Buckell); 1 ♂, Otter Creek, B. C., June 14, 1920, (Hopping); 2 ♂, 1 ♀, Trinity Valley, B. C., May 25 and 28 and June 3, 1928 and 1930, (R. T. Turner and J. R. L. Howell); 1 ♂, Midday Valley, Merritt, B. C., May 20, 1923, (R. Hopping); 1 ♂, Crow's Nest Pass, Alta., June 9, 1930, (J. H. Pepper); 1 ♂, Olds, Alta., June 5, 1898, (T. N. Willing); 2 ♂, 4 ♀, Gull Lake,

Alta., June 8, 1929, (E. H. Strickland); 1 ♂, 1 ♀, Beaverlodge, Alta., August, 1927 (bred) and June 16, 1931, (E. H. Strickland); 2 ♂, Edmonton, Alta., June 7 and 8, 1918 and 1919, (F. S. Carr); 1 ♂, South Fork River, Alta., May 24, 1928, (F. S. Carr); 1 ♂, Lundbreck, Alta., May 26, 1928, (F. S. Carr); 3 ♂, Beaver Creek, Alta., June 24, 1926, (F. S. Carr).

The paratypes measure from 4.7 to 5.8 mm. The males are usually a little smaller than the females. The aeadeagus measures from .69 to .79 mm. The black elytral vittae may be somewhat larger or smaller than in the type. In the allotype and one paratype, the elytra are reddish-yellow, marked with blackish only at the extreme base. In two specimens, the elytra are entirely reddish-brown. The lateral vitta is reduced more frequently than the sutural. In some specimens, the elytra are feebly and indistinctly truncate. The present species need not be confused with others associated with it by the characters of the aedeagus, but it does resemble *fucatus* and *suspectus* in all other characters. Females of *asclus* may be distinguished sometimes from females of these others by their smaller size.

19. **Dalopius jucundus** n. sp.

Male. Length 5.6 mm. Pale reddish-brown; the head blackish between the eyes; the margins of the prothorax, the antennae, legs, and a large vitta on each elytron pale reddish-yellow; the elytral vitta rather distinctly limited in basal three-fifths but not apically, extending from the humeral umbone to the sutural interval a short distance behind the scutellum, narrowed and becoming remote from the suture apically.

Antenna surpassing the pronotal angle by the length of three and one-half segments; the fourth segment four-fifths as long as segments two and three united. Pronotum as long as wide, its posterior angles rather feebly produced. Propleuron feebly emarginate, feebly angulate. Elytron subtruncate at apex.

Length of aedeagus .71 mm., the form of the lobes quite characteristic.

Holotype— ♂, Sequoia National Park, Calif., 2000-3000 ft., May 28, 1929, (A. T. McClay); No. 3561 in the Canadian National Collection, Ottawa.

Paratypes— ♂, same data, 3 ♂, Keweah, Calif., (R. Hopping); 1 ♂, 3 mi. north of Poplar, Tulare Co., Calif., April 12, 1905.

The paratypes measure from 5.3 to 6 mm. In two of them, the antennae are red, and in two others, the pronotum is paler, being red at middle. In three, the elytral vitta extends to the apex, but in only one of these is it distinctly limited on the apical portion of the elytron. The aedeagus measures from .71 to .74 mm., and does not resemble that of any other species. On account of its rather small size, pale color, and elytral markings, *jucundus* is not likely to be confused with other species.

20. **Dalopius gracilis** n. sp.

Male. Length 6.6 mm. Body slightly more elongate than usual. Pale reddish-yellow; the head, sides of the prosternum, metasternum, and abdomen except at the extreme apex, black; antennae, except the basal segments, dark brown; a very narrow median vitta on basal three fourths of the pronotum, and sutural interval and extreme base of each elytron blackish.

Antenna surpassing the pronotal angle by the length of three segments; the fourth segment four-fifths as long as the second and third united. Pronotal

width equal to nine-tenths the length; the posterior angles moderately produced. Propleuron very feebly emarginate but distinctly angulate. Elytron very distinctly truncate at apex.

Length of aedeagus .92 mm.; the aedeagus paler and the apical portion of the lateral lobes longer than usual; median struts very long and slender, always converging feebly.

Female. Antenna surpassing the pronotal angle by the length of two segments.

Holotype— ♂, Berkeley, Calif., April, 1932, (L. W. Saylor); No. 3562 in the Canadian National Collection, Ottawa.

Allotype— ♀, same data.

Paratypes—7 ♂, 13 ♀, same data; 1 ♂, Ben Lomond, Calif., 1932, (L. W. Saylor); 1 ♂, Mt. Hamilton, Calif., June 3, 1932, (L. W. Saylor); 1 ♂, Monterey, Calif., April 20, 1930; 1 ♂, Mendocino Co., Calif., May 16, 1929, (E. R. Leach); 1 ♂, San Francisco Co., Calif., May 7, 1916, (R. Hopping); 1 ♂, Contra Costa Co., Calif.; 1 ♂, Alameda Co., Calif., Feb. 8, 1914.

The paratypes measure from 6.5 to 8 mm. The color is somewhat variable. The pronotal vitta is frequently smaller than in the holotype, but it is sometimes enlarged to form an oval spot which may occupy nearly half of the pronotal area but which never attains the anterior margin. The sutural vitta of the elytron may be brown and sometimes does not attain the base. The external margin of the elytron may be brown or black except at base. In the most heavily maculate specimens, the sutural and lateral vitta each occupy two intervals and are joined together at the apex. In some of the females, the prothorax is not longer than wide. The aedeagus measures from .88 to .95 mm. and is quite characteristic in form.

Examples in which the pronotal spot is small may be distinguished by color from all species except *partitus*. More heavily maculate specimens approach *tularensis* and *invidiosus* in color.

21. **Dalopius tularensis** n. sp.

Male. Length 8 mm. Blackish, the margins of the prothorax and antennae red; legs reddish-yellow; each elytron with a pale reddish-yellow vitta occupying four intervals and extending from humeral umbone to apical third where it grades into the brownish apical area.

Antenna surpassing the pronotal angle by the length of two segments; the fourth segment three-fourths as long as the second and third united. Pronotum as wide as long, the posterior angles moderately produced. Propleuron with a moderate emargination, very obtusely but distinctly angulate. Elytron truncate at apex.

Length of aedeagus 1.04 mm., the form of the lobes unique.

Holotype— ♂, Kaweah, Tulare Co., Calif., April 10, 1907, (R. Hopping); No. 3563 in the Canadian National Collection, Ottawa.

Paratypes— ♂, same locality and collector; 1 ♂, Sierra N. F., Fresno Co., Calif., Stevenson Creek, May 27, 1915, (R. Hopping).

The paratypes measure from 7.4 and 7.6 mm. In one, the sides of the pronotum are broadly red, but the central dark area occupies more than half the area of the disk. In the other, this central spot is brownish-red. In both para-

types, the elytra are yellow except for each sutural interval and the extreme base within the humeral umbone which are brownish. The aedeagus measures from .97 to 1.06 mm.

The present species resembles several of the paler Californian species. In *invidiosus* and *gracilis*, the body is more elongate and slightly smaller, and in the latter, the pronotal spot is smaller. The unique type of *partitus* is paler in color than the palest example of *tularensis*.

With this species, I associate four females from Kaweah which, however, I cannot separate from females taken with *dentatus*. It may be found that the present species differs constantly from *dentatus* by the color of the legs.

22. **Dalopius dentatus** n. sp.

Male. Length 7 mm. Black; the antennae and legs dark brown; the prothoracic margins narrowly red; elytra pale brownish-red, the basal declivity dark brown.

Antenna surpassing the pronotal angle by the length of two segments; the fourth segment three-fourths as long as the second and third united. Pronotum as wide as long, the posterior angles moderately produced. Propleuron feebly emarginate, not angulate. Elytron truncate at apex.

Length of aedeagus 1.12 mm.; the median lobe with a tooth on each side.

Holotype—♂, Sequoia National Park, Calif., 7000-9000 ft., June 13, 1929. (A. T. McClay); No. 3564 in the Canadian National Collection, Ottawa.

Paratype—1 ♂, same data.

The paratype measures 7.3 mm., its aedeagus 1.18 mm. In the paratype, the basal spot of the elytra extends along the suture as a wide, black vitta which, at the middle, grades into the brown area which occupies the entire apical half. This is the only species in which the lateral margins of the median lobe are dentate. The species is quite similar to *tularensis* in color. To *dentatus* I refer three females bearing the same data as the holotype; I cannot find any differences between these and females taken at the type locality of *tularensis*.

23. **Dalopius inordinatus** n. sp.

Male. Length 4.6 mm. Body short in proportion to its width, distinctly more robust and convex than usual; agreeing in form with *mirabilis* only. Very dark brown; the antennae, anterior margin and posterior angles of pronotum, and the elytra reddish-brown; the legs reddish-yellow.

Antenna surpassing the pronotal angle by the length of one segment, its fourth segment three-fifths as long as the second and third united. Pronotum as long as wide, its posterior angles rather feebly produced. Propleuron feebly emarginate, not angulate. Elytron subtruncate.

Length of aedeagus .74 mm.; the sides of the median lobe perfectly straight and parallel; the emargination of the basal piece only moderately deep.

Female. Antenna surpassing the pronotal angle by the length of one segment.

Holotype—♂, Cypress Hills, Alta., June 28, 1927. (F. S. Carr); No. 3565 in the Canadian National Collection, Ottawa.

Allotype—♀, same data, May 25, 1925.

Paratypes—2 ♂, same data, June 3, 1925, and June 5, 1924.

The paratypes measure 4.3 and 4.6 mm. Although the species is unusually convex and robust, its habitus and essential characters are distinctly those of *Dalopius*, and not of *Agriotes*. In *mirabilis*, the size is larger, the color is much paler, and the aedeagus is of a different type; I can detect no other differences between that species and *inordinatus*.

24. **Dalopius mirabilis** n. sp.

Male. Length 5.9 mm. Form as in *inordinatus*, the body shorter and more robust than usual. Blackish; the antennae and prothoracic margins dull red; elytra and legs reddish-yellow.

Antenna surpassing the pronotal angle by the length of one and one-half segments; the fourth segment two-thirds as long as the second and third united. Pronotum as long as wide, its posterior angles rather feebly produced. Propleuron feebly emarginate, very obtusely but distinctly angulate. Elytron subtruncate.

Length of aedeagus 1.04 mm., the form much as in *incomptus*.

Female. Antenna surpassing the pronotal angle by half the length of a segment.

Holotype—♂, Cypress Hills, Alta., June 25, 1927, (F. S. Carr); No. 3566 in the Canadian National Collection, Ottawa.

Allotype—♀, same data, May 1, 1926.

Paratypes—4♂, 5♀, same data, May 1 and 15 and June 3 and 25, 1924 to 1927; 1♂, Empress, Alta., June 4, 1926, (F. S. Carr); 1♀, Medicine Hat, Alta., May 21, 1925, (F. S. Carr); 1♂, 1♀, Aweme, Man., June 9, 1910, (E. Criddle); 1♀, Douglas, Man., July 12, 1922, (R. M. White); 2♂, 1♀, Montreal, Que., (Chagnon).

The paratypes measure from 5.8 to 7 mm. In several, the prothoracic sides are black like the disk; in several others, the entire disk is reddish. In one specimen, the elytra are reddish-brown. The propleuron is usually without an angle. The aedeagus measures from 1.04 to 1.10 mm. On account of its robust form and immaculate, pale elytra, *mirabilis* is not likely to be confused with other species. It is larger and paler than *inordinatus*.

25. **Dalopius plutonicus** n. sp.

Male. Length 6.7 mm. Black; the antennae and legs reddish-brown; anterior margin and posterior angles of prothorax and the elytra reddish-yellow; each elytron with the sutural margin narrowly in basal two thirds and the basal declivity black.

Antenna surpassing the pronotal angle by the length of one and one-half segments, the fourth segment two-thirds as long as the second and third united. Pronotum as long as wide, its posterior angles feebly produced. Propleuron feebly emarginate, not angulate. Elytron truncate at apex.

Length of aedeagus 1.08 mm.; the lateral lobes slender, their apical portions elongate and distinctly angulate.

Female. Antenna surpassing the pronotal angle by half the length of a segment.

Holotype—♂, Carrville, Trinity Co., Calif., June 1, 1913, (E. C. Van Dyke); No. 3567 in the Canadian National Collection, Ottawa.

Allotype—♀, same data.

Paratypes—2♀, same data, June 1 and 4, 1913.

The allotype and paratypes measure from 6.3 to 6.8 mm. In one of the paratypes, the pronotal sides are broadly reddish-yellow and the elytral apex is rounded. The species resembles *ignobilis* in color.

26. **Dalopius incomptus** n. sp.

Male. Length 6.7 mm. Black, the elytra not paler, the legs very dark brown.

Antenna surpassing the pronotal angle by the length of one and one-half segments, the fourth two-thirds as long as the second and third united. Pronotum as long as wide, its posterior angles feebly produced, the disk less densely punctate than in *validus* and *lutulentus*. Propleuron feebly emarginate, not angulate. Elytron truncate at apex.

Length of aedeagus 1.04 mm.; the lateral lobes feebly widened basally, their apical portions obtusely angulate.

Holotype—♂, Nr. Mather, Tuolumne Co., Calif., July 8, 1929. (E. C. Zimmerman); No. 3568 in the Canadian National Collection, Ottawa.

Paratype—1 ♂, same data, July 9, 1929.

The paratype measures 7.3 mm. The species occurs in the same locality as *validus* and resembles the latter in color. I refer a female from Toulome County to this species rather than to *validus* on account of its less densely punctate pronotum.

27. **Dalopius lutulentus** n. sp.

Male. Length 6 mm. Black; the antennae, legs, and elytra near the apex very dark reddish-brown; the anterior margin of pronotum red.

Antenna surpassing the pronotal angle by the length of two segments, the fourth segment seven-tenths as long as the second and third united. Pronotum as long as wide, its posterior angles feebly produced, the disk a little more densely punctate than in *incomptus*. Propleuron feebly emarginate, not angulate. Elytron truncate at apex.

Length of aedeagus about .9 mm.; the apical portion of each lateral lobe with the angle obtuse but quite prominent.

Holotype—♂, Cambria, Calif., May 19, 1930, (R. Hopping); No. 3569 in the Canadian National Collection, Ottawa.

The basal piece of the aedeagus is badly damaged. The species agrees in color with *validus* and *incomptus*.

(to be continued)

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